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(56) Documents cited
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(54) Improved hearing aids

(57) This invention concerns a hearing aid of the type comprising a pair of spectacles with a microphone and means for transmitting sounds picked up by the microphone to the ears of the wearer. In accordance with the invention, the microphone is directed forwards and is located on the nose piece of the frame or on the portions of the side pieces nearest the front. Electrical power supply from a battery, powering the hearing aid can be interrupted by a microswitch when the spectacle frame is folded.

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SPECIFICATION

Improved hearing aids

This invention relates to hearing aids which are embodied in spectacle frames, the complete article being called hereinafter "Hearing Glasses".

Partly concealed hearing aids such as those located behind or inside the ear suffer from the disadvantage that unless the wearer's head is turned, the microphone of the hearing aid is not facing the source of the sound waves emitted by the source, e.g. a speaker or a musical instrument. As a result the sound picked up has to be considerably amplified in order for it to be heard satisfactorily. Furthermore, extraneous noises from sources directly facing the microphone will be picked up and amplified and may well drown the noise which it is desired to hear.

These disadvantages apply also to hearing glasses at present available, since the microphone of such hearing glasses is embodied in one of the side pieces of the frame and is therefore directed at an angle of 90° to the sound line when the wearer is facing the noise source.

According to the present invention these disadvantages are overcome by locating the microphone of the hearing aid in the frontal part of the spectacle frame and facing to the front of the wearer. This frontal part of the frame may be for instance the nose-bridge piece of the frame or the front end of one or both of the side-pieces of the frame.

The amplifier, battery and sound reproducer of the hearing aid are of conventional type and as is customary are housed in one or both of the sidepieces. Connection to the microphone is by means of leads moulded into the sidepiece and frame. If the microphone is in the bridge-piece flexible wires may be used where the side-pieces hinge on to the front piece of the frame, so that the side-pieces can be folded down when the glasses are not in use. Preferably however, a micro switch for instance a divided or two-piece hinge is used, each portion being connected to a lead. When the hearing glasses are being worn the two parts are in contact but when the side-pieces are folded down the circuit is broken.

If the microphone is located at the front end of a sidepiece the frontal area of the side-piece will be larger than usual and it may be hinged to the side of the front-piece of the frame or preferably behind it in the customary manner. Naturally if only one microphone is fitted the other side-piece must be made to match the appearance of the one in which the microphone is located. Preferably each side-piece will be fitted with a microphone.

The sounds received and amplified in the hearing glasses of this invention may be transmitted to the wearer by either the bone conduction system or the air conduction method. In the former the sound is conveyed to the mastoid bone by means of a spring-loaded pad of a hard material embodied in the side-piece and so disposed that it is pressed against the head of the wearer. Alternatively the sounds may be transmitted to the wearer by continuing the side-pieces so that they encircle the ears and then enter the ears from beneath the lobes. These side-pieces terminate in pea-sized units which can either be inserted in the ears or held just clear of them. Each unit may be a tiny loudspeaker or a plug with a hole through it which is connected to a speaker unit in the side-piece by means of a capillary tube. In either case connection to the amplifier or sound unit in the side-piece is included in the moulding and cannot be seen. If the units are inserted fully into the ears, only amplified sound will be heard but if the units are not in the ears but closely adjacent to them non-amplified extraneous sounds will be heard in addition to the required amplified sounds.

Side-pieces can be made in different styles and lengths to suit individual tastes or alternatively the side-pieces can be of standard length and ear-encircling extensions made of various shapes and lengths so that a selection can be made to suit the wearer. The extensions and the pea-sized units are preferably made from flesh-coloured rubber or Neoprene or any other suitable plastics material.

CLAIMS

1. A hearing aid comprising pair of spectacles having a frame comprising a bridge piece and side pieces, which frame is associated with a microphone, transmitting means for transmitting sounds picked up by the microphone into one or both ears of a wearer of the spectacles, and a lead or leads for conducting sounds from the microphone to the transmitting means, wherein the microphone faces forward and is located in the bridge piece or at the forward end of a side piece.

2. A hearing aid as claimed in Claim 1 wherein a hinge is provided between the bridge piece and each side piece and a microswitch is associated with at least one of said hinges to interrupt the supply of electrical power to a circuit including said microphone and transmitting means.

3. A hearing aid as claimed in Claim 1 wherein the lead or each lead continuously connects a respective microphone and transmitting means.

4. A hearing aid as claimed in any of Claims 1 to 3 wherein the transmitting means is of the bone conduction type.

5. A hearing aid as claimed in any of Claims 1 to 3 wherein the transmitting means is of the air conduction type.

6. A hearing aid as claimed in Claim 1 and substantially as hereinbefore described.

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